

SEQUENCE LISTING

<110> Fikes, John D.
Sette, Alessandro
Sidney, John
Southwood, Scott
Celis, Esteban
Keogh, Elissa A.
Chesnut, Robert

<120> HLA Class I A2 Tumor Associated Antigen
Peptides and Vaccine Compositions

<130> 2060.0150002

<140> US 09/583,200
<141> 2000-05-30

<150> US 60/170,448
<151> 1999-12-13

<150> US 60/141,422
<151> 1999-06-29

<150> US 09/098,584
<151> 1998-06-17

<150> US 09/017,735
<151> 1998-02-03

<150> US 09/016,361
<151> 1998-01-30

<150> US 08/821,739
<151> 1997-03-20

<150> US 60/036,696
<151> 1997-01-31

<150> US 60/013,833
<151> 1996-03-21

<150> US 08/589,108
<151> 1996-01-23

<150> US 08/589,107
<151> 1996-01-23

<150> US 08/451,913
<151> 1995-05-26

<150> US 08/347,610
<151> 1994-12-01

<150> US 08/205,713
<151> 1994-03-04

<150> US 08/186,266
<151> 1994-01-25

RECEIVED
TECH CENTER 1600/2900
03 FEB 19 PM 3:28

RECEIVED
MAR 08 2003
TECH CENTER 1600/2900

<150> US 08/159,339
<151> 1993-11-29

<150> US 08/159,184
<151> 1993-11-29

<150> US 08/103,396
<151> 1993-08-06

<150> US 08/073,205
<151> 1993-06-04

<150> US 08/027,746
<151> 1993-03-05

<150> US 08/027,146
<151> 1993-03-05

<160> 72

<170> PatentIn version 3.1

<210> 1
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> CEA.233V10

<400> 1
Val Leu Tyr Gly Pro Asp Ala Pro Thr Val
1 5 10

<210> 2
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> CEA.605V9

<400> 2
Tyr Leu Ser Gly Ala Asn Leu Asn Val
1 5

<210> 3
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> CEA.687

<400> 3
Ala Thr Val Gly Ile Met Ile Gly Val
1 5

<210> 4
<211> 11
<212> PRT

<213> Artificial Sequence

<220>

<223> p53.25V11

<400> 4

Leu Leu Pro Glu Asn Asn Val Leu Ser Pro Val
1 5 10

<210> 5

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> p53.139L2

<400> 5

Lys Leu Cys Pro Val Gln Leu Trp Val
1 5

<210> 6

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> p53.139L2B3

<400> 6

Lys Leu Asx Pro Val Gln Leu Trp Val
1 5

<210> 7

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> p53.149L2

<400> 7

Ser Leu Pro Pro Pro Gly Thr Arg Val
1 5

<210> 8

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> p53.149M2

<400> 8

Ser Met Pro Pro Pro Gly Thr Arg Val
1 5

<210> 9

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Her2/neu.369L2V9

<400> 9

Lys Leu Phe Gly Ser Leu Ala Phe Val
1 5

<210> 10

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Her2/neu.369V2V9

<400> 10

Lys Val Phe Gly Ser Leu Ala Phe Val
1 5

<210> 11

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Her2/neu.773

<400> 11

Val Met Ala Gly Val Gly Ser Pro Tyr Val
1 5 10

<210> 12

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Her2/neu.5

<400> 12

Ala Leu Cys Arg Trp Gly Leu Leu Leu
1 5

<210> 13

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> MAGE3.271

<400> 13

Phe Leu Trp Gly Pro Arg Ala Leu Val
1 5

<210> 14

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Her2/neu.48

<400> 14

His Leu Tyr Gln Gly Cys Gln Val Val
1 5

<210> 15

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Her2/neu.435

<400> 15

Ile Leu His Asn Gly Ala Tyr Ser Leu
1 5

<210> 16

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> CEA.691

<400> 16

Ile Met Ile Gly Val Leu Val Gly Val
1 5

<210> 17

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Her2/neu.369

<400> 17

Lys Ile Phe Gly Ser Leu Ala Phe Leu
1 5

<210> 18

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> MAGE3.112

<400> 18

Lys Val Ala Glu Leu Val His Phe Leu
1 5

<210> 19

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> CEA.24V9

<400> 19

Leu Leu Thr Phe Trp Asn Pro Pro Val
1 5

<210> 20

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> MAGE3.160

<400> 20

Leu Val Phe Gly Ile Glu Leu Met Glu Val
1 5 10

<210> 21

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> MAGE3.159

<400> 21

Gln Leu Val Phe Gly Ile Glu Leu Met Glu Val
1 5 10

<210> 22

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Her2/neu.689

<400> 22

Arg Leu Leu Gln Glu Thr Glu Leu Val
1 5

<210> 23

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Her2/neu.665

<400> 23

Val Val Leu Gly Val Val Phe Gly Ile
1 5

<210> 24

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> MAGE2.157

<400> 24
Tyr Leu Gln Leu Val Phe Gly Ile Glu Val
1 5 10

<210> 25
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Her2/neu.952

<400> 25
Tyr Met Ile Met Val Lys Cys Trp Met Ile
1 5 10

<210> 26
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> tetanus toxoid positions 830-843, standard peptide 553.01

<400> 26
Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu
1 5 10

<210> 27
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Plasmodium falciparum CS protein positions 378-398

<400> 27
Asp Ile Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe
1 5 10 15
Asn Val Val Asn Ser
20

<210> 28
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Streptococcus 18kD protein position 116

<400> 28
Gly Ala Val Asp Ser Ile Leu Gly Gly Val Ala Thr Tyr Gly Ala Ala
1 5 10 15

<210> 29
<211> 13
<212> PRT
<213> Artificial Sequence

```
<220>
<223> pan-DR binding epitope peptide

<220>
<221> MOD_RES
<222> (1)...(1)
<223> Ala = D-alanine or L-alanine

<220>
<221> MOD_RES
<222> (3)...(3)
<223> Xaa = cyclohexylalanine, Phe or Tyr

<220>
<221> MOD_RES
<222> (7)...(7)
<223> Xaa = Trp, Tyr, His or Asn

<220>
<221> MOD_RES
<222> (13)...(13)
<223> Ala = D-alanine or L-alanine

<400> 29
Ala Lys Xaa Val Ala Ala Xaa Thr Leu Lys Ala Ala Ala
1          5          10

<210> 30
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> alternative preferred PADRE peptide

<220>
<221> MOD_RES
<222> (3)...(3)
<223> Xaa = cyclohexylalanine

<400> 30
Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
1          5          10

<210> 31
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> alternative preferred PADRE peptide

<400> 31
Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
1          5          10

<210> 32
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
```


<223> alternative preferred PADRE peptide

<400> 32

Ala Lys Tyr Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
1 5 10

<210> 33

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> alternative preferred PADRE peptide

<400> 33

Ala Lys Phe Val Ala Ala Tyr Thr Leu Lys Ala Ala Ala
1 5 10

<210> 34

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> alternative preferred PADRE peptide

<220>

<221> MOD_RES

<222> (3)...(3)

<223> Xaa = cyclohexylalanine

<400> 34

Ala Lys Xaa Val Ala Ala Tyr Thr Leu Lys Ala Ala Ala
1 5 10

<210> 35

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> alternative preferred PADRE peptide

<400> 35

Ala Lys Tyr Val Ala Ala Tyr Thr Leu Lys Ala Ala Ala
1 5 10

<210> 36

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> alternative preferred PADRE peptide

<400> 36

Ala Lys Phe Val Ala Ala His Thr Leu Lys Ala Ala Ala
1 5 10

<210> 37

<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> alternative preferred PADRE peptide

<220>
<221> MOD_RES
<222> (3)...(3)
<223> Xaa = cyclohexylalanine

<400> 37
Ala Lys Xaa Val Ala Ala His Thr Leu Lys Ala Ala Ala
1 5 10

<210> 38
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> alternative preferred PADRE peptide

<400> 38
Ala Lys Tyr Val Ala Ala His Thr Leu Lys Ala Ala Ala
1 5 10

<210> 39
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> alternative preferred PADRE peptide

<400> 39
Ala Lys Phe Val Ala Ala Asn Thr Leu Lys Ala Ala Ala
1 5 10

<210> 40
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> alternative preferred PADRE peptide

<220>
<221> MOD_RES
<222> (3)...(3)
<223> Xaa = cyclohexylalanine

<400> 40
Ala Lys Xaa Val Ala Ala Asn Thr Leu Lys Ala Ala Ala
1 5 10

<210> 41
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> alternative preferred PADRE peptide

<400> 41
Ala Lys Tyr Val Ala Ala Asn Thr Leu Lys Ala Ala Ala
1 5 10

<210> 42
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> standard peptide 944.02

<400> 42
Tyr Leu Glu Pro Ala Ile Ala Lys Tyr
1 5

<210> 43
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> standard peptide 941.01

<400> 43
Phe Leu Pro Ser Asp Tyr Phe Pro Ser Val
1 5 10

<210> 44
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> standard peptide 1072.34

<400> 44
Tyr Val Ile Lys Val Ser Ala Arg Val
1 5

<210> 45
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> standard peptide 941.12

<400> 45
Lys Val Phe Pro Tyr Ala Leu Ile Asn Lys
1 5 10

<210> 46
<211> 9
<212> PRT
<213> Artificial Sequence

<220>

<223> standard peptide 940.06

<400> 46

Ala Val Asp Leu Tyr His Phe Leu Lys
1 5

<210> 47

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> standard peptide 1083.02

<400> 47

Ser Thr Leu Pro Glu Thr Tyr Val Val Arg Arg
1 5 10

<210> 48

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> standard peptide 979.02

<400> 48

Ala Tyr Ile Asp Asn Tyr Asn Lys Phe
1 5

<210> 49

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> standard peptide 1075.23

<400> 49

Ala Pro Arg Thr Leu Val Tyr Leu Leu
1 5

<210> 50

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> standard peptide 1021.05

<400> 50

Phe Pro Phe Lys Tyr Ala Ala Ala Phe
1 5

<210> 51

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> standard peptide 515.01

<400> 51
Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr
1 5 10

<210> 52
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> standard peptide 829.02

<400> 52
Tyr Lys Thr Ile Ala Phe Asp Glu Glu Ala Arg Arg
1 5 10

<210> 53
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> standard peptide 717.01

<400> 53
Tyr Ala Arg Phe Gln Ser Gln Thr Thr Leu Lys Gln Lys Thr
1 5 10

<210> 54
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> standard peptide 1200.05

<400> 54
Glu Ala Leu Ile His Gln Leu Lys Ile Asn Pro Tyr Val Leu Ser
1 5 10 15

<210> 55
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> standard peptide 650.22

<400> 55
Gln Tyr Ile Lys Ala Asn Ala Lys Phe Ile Gly Ile Thr Glu
1 5 10

<210> 56
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> DR7 preferred motif

<220>
<221> VARIANT
<222> (1)..(1)
<223> Met, Phe, Leu, Ile, Val, Trp, or Tyr

<220>
<221> VARIANT
<222> (5)..(5)
<223> May be any amino acid

<220>
<221> VARIANT
<222> (6)..(6)
<223> Ile, Val, Met, Ser, Ala, Cys, Thr, Pro, or Leu

<220>
<221> VARIANT
<222> (8)..(8)
<223> May be any amino acid

<220>
<221> VARIANT
<222> (9)..(9)
<223> Ile or Val

<400> 56
Xaa Met Trp Ala Xaa Xaa Met Xaa Xaa
1 5

<210> 57
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> DR7 deleterious motif

<220>
<221> VARIANT
<222> (1)..(1)
<223> May be any amino acid

<220>
<221> VARIANT
<222> (3)..(3)
<223> May be any amino acid

<220>
<221> VARIANT
<222> (5)..(6)
<223> May be any amino acid

<220>
<221> VARIANT
<222> (7)..(7)
<223> Gly, Arg, or Asp

<400> 57
Xaa Cys Xaa Gly Xaa Xaa Xaa Asn Gly
1 5

<210> 58
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> PADRE peptide

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Ala represents D-alanine

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa is cyclohexylalanine

<220>
<221> MOD_RES
<222> (13)..(13)
<223> Ala is D-alanine

<400> 58

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
1 5 10

<210> 59
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> PADRE peptide

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Ala is D-alanine

<220>
<221> MOD_RES
<222> (13)..(13)
<223> Ala is D-alanine

<400> 59

Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
1 5 10

<210> 60
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> PADRE peptide

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Ala is D-alanine

<220>
<221> MOD_RES
<222> (13)..(13)
<223> Ala is D-alanine

<400> 60

Ala Lys Tyr Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
1 5 10

<210> 61
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> PADRE peptide

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Ala is D-alanine

<220>
<221> MOD_RES
<222> (13)..(13)
<223> Ala is D-alanine

<400> 61

Ala Lys Phe Val Ala Ala Tyr Thr Leu Lys Ala Ala Ala
1 5 10

<210> 62
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> PADRE peptide

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Ala is D-alanine

<220>
<221> MISC_FEATURE
<222> (3)..(3)

<223> Xaa is cyclohexylalanine

<220>

<221> MOD_RES

<222> (13)..(13)

<223> Ala is D-alanine

<400> 62

Ala Lys Xaa Val Ala Ala Tyr Thr Leu Lys Ala Ala Ala
1 5 10

<210> 63

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> PADRE peptide

<220>

<221> MOD_RES

<222> (1)..(1)

<223> Ala is D-alanine

<220>

<221> MOD_RES

<222> (13)..(13)

<223> Ala is D-alanine

<400> 63

Ala Lys Tyr Val Ala Ala Tyr Thr Leu Lys Ala Ala Ala
1 5 10

<210> 64

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> PADRE peptide

<220>

<221> MOD_RES

<222> (1)..(1)

<223> Ala is D-alanine

<220>

<221> MOD_RES

<222> (13)..(13)

<223> Ala is D-alanine

<400> 64

Ala Lys Phe Val Ala Ala His Thr Leu Lys Ala Ala Ala
1 5 10

<210> 65
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> PADRE peptide

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Ala is D-alanine

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa is cyclohexylalanine

<220>
<221> MOD_RES
<222> (13)..(13)
<223> Ala is D-alanine

<400> 65

Ala Lys Xaa Val Ala Ala His Thr Leu Lys Ala Ala Ala
1 5 10

<210> 66
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> PADRE peptide

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Ala is D-alanine

<220>
<221> MOD_RES
<222> (13)..(13)
<223> Ala is D-alanine

<400> 66

Ala Lys Tyr Val Ala Ala His Thr Leu Lys Ala Ala Ala
1 5 10

<210> 67
<211> 13
<212> PRT
<213> Artificial Sequence

<220>

<223> PADRE peptide

<220>

<221> MOD_RES

<222> (1)..(1)

<223> Ala is D-alanine

<220>

<221> MOD_RES

<222> (13)..(13)

<223> Ala is D-alanine

<400> 67

Ala Lys Phe Val Ala Ala Asn Thr Leu Lys Ala Ala Ala
1 5 10

<210> 68

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> PADRE peptide

<220>

<221> MOD_RES

<222> (1)..(1)

<223> Ala is D-alanine

<220>

<221> MISC_FEATURE

<222> (3)..(3)

<223> Xaa is cyclohexylalanine

<220>

<221> MOD_RES

<222> (13)..(13)

<223> Ala is D-alanine

<400> 68

Ala Lys Xaa Val Ala Ala Asn Thr Leu Lys Ala Ala Ala
1 5 10

<210> 69

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> PADRE peptide

<220>

<221> MOD_RES

<222> (1)..(1)

<223> Ala is D-alanine

<220>

<221> MOD_RES

<222> (13)..(13)

<223> Ala is D-alanine

<400> 69

Ala Lys Tyr Val Ala Ala Asn Thr Leu Lys Ala Ala Ala
1 5 10

<210> 70

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> PADRE peptide

<220>

<221> MOD_RES

<222> (1)..(1)

<223> Ala is D-alanine

<220>

<221> MOD_RES

<222> (3)..(3)

<223> Xaa is cyclohexylalanine

<220>

<221> misc_feature

<222> (3)..(3)

<223> Xaa can be any naturally occurring amino acid

<220>

<221> MOD_RES

<222> (13)..(13)

<223> Ala is D-alanine

<220>

<221> MOD_RES

<222> (13)..(13)

<223> AMIDATION

<400> 70

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
1 5 10

<210> 71

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> PADRE peptide

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Ala is D-alanine

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> Ala is D-alanine

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 71

Ala Lys Phe Val Ala Ala Tyr Thr Leu Lys Ala Ala Ala
 1 5 10

<210> 72
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PADRE peptide

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Ala is D-alanine

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> Xaa is cyclohexylalanine

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> Ala is D-alanine

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 72

Ala Lys Xaa Val Ala Ala His Thr Leu Lys Ala Ala Ala
 1 5 10

D1 Comp